SECTION C Descriptions and Specifications

STATEMENT OF WORK

1.0 NATURE OF SERVICES TO BE PERFORMED

The contractor shall provide engineering, technical, and logistic support services, including the engineering and technical personnel and facilities required to develop and integrate technological improvements focused on the logistic support of the maintenance processes for the US Navy. This will include the implementation and execution of condition assessment, monitoring, and systems integration programs being developed and conducted by the Systems Integration and Program Development Group. The contractor shall be required to provide support in advanced technology development and future ship maintenance concepts and strategies to the Program Office and to the Program Field Offices in Norfolk, VA; Mayport, FL; Kings Bay, GA; Pascagoula, MS; Ingleside, TX; Bath, ME; Bangor, ME; Everett, WA; San Diego, CA; Bremerton, WA; and Pearl Harbor, HI.

2.0 BACKGROUND

With shrinking Naval force levels and mandated reductions in maintenance funds in the face of unremitting operational commitments, the Systems Integration and Program Development Group requires support in the development, implementation, execution, and maintenance of a comprehensive, integrated condition based assessment/continuous monitoring programs for both surface ship and submarine equipment and systems. These efforts are aimed at achieving significant and real reductions in maintenance expenditures and increased equipment availability, while maintaining the operational survivability of Naval ships and submarines. Program goals are to provide total productive maintenance in a realistic waterfront effort that considers all aspects of system/equipment operation, maintenance, and logistics support.

To execute its responsibilities, the Program Office requires the support of maintenance engineering specialists to assist in the development, implementation, and execution of the Navy's condition assessment, monitoring, and systems integration programs. This support requires responsive and high quality engineering and technical services that only a specialized contractor can provide.

Naval Surface Warfare Center Carderock Division (NSWCCD) Philadelphia, Code 916, shall have overall control and responsibility of the projects for which written work assignment, hereinafter called "Delivery Orders", shall be issued. Renzo Munno, Code 9163, has been designated as the Contracting Officer's Representative (COR). The contractor's control and responsibility shall be limited to the satisfactory execution of the segments of work specified in each Delivery Order.

3.0 SCOPE OF WORK

The contractor shall provide program engineering, marine engineering, technical and logistics support for the implementation, execution, and prototype development of condition assessment and other advanced technologies for naval ship systems on surface ship and submarine hulls for the Systems Integration and Program Development office. This Statement of Work (SOW) describes services to be applied via individual delivery orders to specific requirements. Work performed under this contract will include, but not be limited to:

- Maintenance Strategies, Planning and Program Management Support
- Maintenance Engineering
- Systems Engineering
- Logistics Engineering
- Test & Evaluation Engineering

3.1 Maintenance strategies, Planning and Program Management support.

The contractor shall provide engineering and technical support to perform the following maintenance strategy and availability planning and execution functions:

(a) Prepare drafts of top level documentation on maintenance strategies, including OPNAV, NAVSEA, FLEET, and TYCOM instructions and similar policy documentation, which implement condition based maintenance (CBM) methodology within the framework of the surface ship and submarine maintenance strategies.

(b) Evaluate data received from all sources to determine ship (system) readiness and identify degradation trends. Recommend appropriate steps to redesign the systems/component responsible for the degradation or make changes to the current maintenance plan or logistic support requirements.

(c) Develop methodologies for automatic input of prioritized, engineered repair recommendations into the ship's current ship's maintenance project and appropriate fleet maintenance decision methodology for tracking repair recommendations from inception to completion.

(d) Review class maintenance and modernization plans, technical repair standards, maintenance requirements and specifications for corrections and preparation of proposed revisions.

(e) Integrate data from established maintenance reports, data/log sheets, repair activity testing and appropriate aspects of reliability and maintainability techniques into formal monitoring programs and by utilizing this information, conduct studies directed at significantly reducing the size of Selected Restricted Availabilities (SRA), Depot Modernization Periods (DMP), and Refueling/regular overhaul work packages.

(f) Develop criteria to determine effective ship/systems/equipment material and operational condition based on data obtained from established maintenance databases and/or specified test and evaluation programs.

(g) Draft integrated class test plans for designated ship classes which delineate all periodic testing, inspections, and other system condition assessment methodologies to serve as an adjunct to the class maintenance and modernization plans.

(h) Assist in establishing goals, milestones, program plans and policy including business plans, long and short range Plan of Action and Milestones (POA&M) and implementation and execution strategies in support of program objectives.

(i) Assist in scheduling and attending periodic program reviews conducted by program activities and contractors and conduct periodic program reviews for the program sponsors.

(j) Provide technical and administrative support to waterfront maintenance activities and other organizational entities involved in equipment monitoring and analysis functions, including on the job training.

(k) Provide engineer and maintenance manager technical support services in support of the installation and validation of condition assessment systems and methodologies.

3.2 Maintenance Engineering

The contractor shall perform independent analysis and technical studies and provide engineering and technical services in the area of mission related maintenance engineering. Areas of particular involvement may include:

(a) Investigating historical mechanical and electrical failures of various submarine and surface ship equipment.

(b) Reviewing and evaluating existing Navy maintenance procedures.

(c) Reviewing and updating current analysis guides and maintenance assessment procedures and preparing new documents for in-service updates and new equipment.

(d) Developing technical planning data, life-cycle cost analysis and return on investment (ROI) studies.

(e) Reviewing and updating existing maintenance management and planning documents and providing technical support for their implementation.

(f) Providing technical support in response to fleet and naval activity requirements.

3.3 Systems Engineering

The contractor will assist the government with the design, installation, and validation of condition assessment and monitoring systems by supporting new concept development which will include engineering algorithms, logic trees (as they pertain to systems diagnostics and prognostics), Failure Modes and Effect Analysis (FMEA), expert systems, and the verification and validation of software developed to support these new concepts.

The contractor shall perform independent analysis and technical studies and provide technical services in the area of systems engineering support. Areas of particular involvement may include:

(a) Analyzing operational and maintenance requirements.

(b) Designing a knowledge base to support diagnostic analysis engines.

(c) Performing Failure Modes and Effects Analysis.

(d) Developing, validating and standardization of system/ship configuration data sets.

(e) Developing installation plans for improvements.

(f) Developing signal databases for condition assessment and monitoring systems.

(g) Performing independent engineering analysis to assess the threat and vulnerability effects on systems/components.

(h) Recommending and performing/supporting redesign, modification, or alteration of hardware and software for system integration and improvements.

(i) Conducting systems engineering studies for ship/systems integration.

(j) Developing new standard job procedures, maintenance procedures, and calibration techniques.

(k) Evaluating ship systems and equipment capabilities to meet Resource Conservation and Recovery Act (RCRA), Toxic Substance Control Act (TSCA), Clean Water Act, Safe Drinking Water Act, and other related environmental regulations.

(l) Developing maintenance strategies for new technologies aimed at reducing sources of hazardous waste streams and at treating hazardous waste.

(m) Formulating and developing test plans and procedures for condition assessment and monitoring systems.

3.4 Logistics Engineering

The contractor shall provide logistics engineering support to design on-line monitoring prototypes that are ship class unique, which upon validation, evaluation, and program office approval, will be modeled as an alteration for installation in the remainder of the class. This support includes, but is not limited to:

(a) Development of Acquisition Plans, Integrated Logistics Support Plans (ILSPs) Naval Training Systems Plans (NTSPs), Computer Resources Life Cycle Management Plans (CRLCMP), Integrated Test Plans and Return on Investment (ROI) studies for the pilot/lead ship of a class.

(b) Researching and reporting on commercially available predictive/condition based diagnostics and applications that can be integrated with existing systems that will aid ship's force and have a positive payback in maintenance resources.

(c) Making ship visits to design layout plans for installation.

(d) Procuring miscellaneous parts and equipment to support the prototype installation, receipt and stowage of these parts with Government Furnished Equipment (GFE) as required.

(e) Developing complete Integrated Logistics Support (ILS) packages. This includes development of documentation in interactive electronic media such as Interactive Electronic Technical Manuals (IETMs) and computer based training modules that pertain to the condition assessment system and its associated equipment.

(f) Developing specific configuration management requirements for hardware and software development and production contracts.

(g) Establishing life cycle status records for change documentation and contract delivery schedules to update inventory data, project the impact of future deliveries on installation scheduling, and forecast installation, manpower, and funding requirements.

(h) Planning, coordinating, and participating in the physical and functional configuration audits.

(i) Assessing submissions of logistics data items.

(j) Preparing technical input for Configuration Control Board (CCB) directives.

(k) Developing, reviewing, and updating Provisioning Technical Documentation (PTD).

3.5 Test and Evaluation Engineering

The contractor shall provide installation support for installing and functionally testing on-line monitoring pilot/lead ship prototypes and validation support by developing a Test and Evaluation Master Plan (TEMP) for the installed prototype. This includes, but is not limited to:

(a) Developing an in-depth installation plan subject to approval by the Program Office.

(b) Formulating testing methodology and developing test procedures for condition assessment, monitoring, and systems integration programs.

4.0 Technical and Financial Reports:

(a) Progress and Financial Reports: A monthly progress and financial report will be submitted to Contracting Officer's Technical Representative (COR) with a copy to the Contracting Officer. In addition, a separate report of the number of man-hours charged to the contract will be submitted monthly to the Contracting Officer.

(b) Technical Reports: Technical reports and conclusions reflecting the work accomplished under each task set fourth will be prepared and delivered to the Government when and in the form required by the Contracting Officer's Representative, in accordance with Contract Data Requirements List (CDRL).

(c) Final Delivery: The delivery date of the last of the above reports is not to be later than the delivery date specified in the CDRLs.

(d) Other Reports: There may be a need for other specific reports, test plans, evaluation reports or documentation created as an integral part of a delivery order under this contract. Report format, contents and delivery requirements will be specified at the time of delivery order issuance.

(e) Delivery Order Status Report: For each delivery order awarded, the contractor will provide a status report which will cite the status and utilization since the last report, the status regarding hours and dollars remaining on the task, percent of completion of the task and any problems anticipated.

(f) Travel Reports: For any remote travel required, the contractor will report the destination, number of travelers, duration of stay, task milestones completed, site points of contact, ship, and hull number visited.

5.0 Facilities

5.1 The contractor is required to have a liaison office within commuting distance from Philadelphia, Pa for liaison with appropriate officials and performance of work.

5.2 The requirement for maintaining these facilities shall not be construed to mean the government will be obligated to pay any direct costs in connection therewith and further, the contractor shall not be entitled to any direct payment in connection with any personnel set in readiness at or brought to such facility in preparation or in exception of work to be performed under the contract.

6.0 Minimum Qualifications

The minimum qualifications for the respective labor categories are as follows.

(a) Program Manager *: The Program Manager shall have a bachelor's degree in engineering from an accredited college or university and a minimum of twenty years experience in the operation, maintenance, design, or testing of US Navy ships Hull, Mechanical, and Electrical (HM&E) equipment of which ten years must have been at the program management level. Experience with Navy maintenance strategies and Navy maintenance systems. Detailed knowledge of US Navy organizations, their functions, and their responsibilities.

(b) Senior Project Engineer *: The Senior Project Engineer shall have a bachelor's degree in engineering from an accredited college or university and have a minimum of fifteen years experience in the operation, maintenance, and in-service testing of Naval shipboard HM&E equipment directly related to the Statement of Work (SOW). The last five years of this experience must be directly related to the SOW. Demonstrated experience managing projects similar in scope, magnitude, and complexity, as those listed in the SOW is mandatory. The educational requirements may be satisfied with an

additional ten years of experience directly related to shipboard maintenance assessment of condition monitoring programs. This experience should include detailed knowledge of integrated condition assessment systems for shipboard equipment condition monitoring, including implementation and operation of computerized on-line diagnostic modules used with these systems.

(c) Senior Electrical Engineer *: The Senior Electrical Engineer shall have a bachelor's degree in electrical engineering from an accredited college or university and a minimum of ten years experience in the design, operation, maintenance or testing of HM&E equipment. Experience in the development of technical documentation utilizing military specifications and standards. Knowledge of US Navy organizations, their functions and their responsibility. Minimum of three years supervisory experience.

(d) Senior Mechanical Engineer *: The Senior Mechanical Engineer shall have a bachelor's degree in mechanical engineering from an accredited college or university and a minimum of ten years experience in the design, operation, maintenance, or testing of HM&E. Experience in the development of technical documentation utilizing military specifications and standards. Knowledge of US Navy organizations, their functions, and their responsibility. Minimum of three years supervisory experience.

(e) Senior Engineering Technican *: The Senior Engineering Technician must be a high school graduate and be a graduate of military schools which have provided an in-depth knowledge of naval shipboard systems maintenance and operation or be a graduate of a trade, industrial or correspondence school for engineering and have fifteen years of experience involving naval ships HM&E equipment. The most recent five years experience must be with machinery condition assessment and equipment condition monitoring programs utilizing computerized on-line diagnostic systems.

(f) Engineering Technician: The Engineering Technician should be a graduate of high school, trade, industrial or correspondence school for engineering and have six years of practical experience involving US Navy ships HM&E equipment.

(g) Electrical Engineer: The Electrical Engineer shall have a bachelor's degree in electrical engineering from an accredited college or university and a minimum of six years experience in the design, operation, maintenance, or testing of US Naval ship's HM&E equipment. Experience in mathematical modeling of, or trending performance of shipboard equipment or systems. Experience in the development of technical documentation utilizing military standards and specifications.

(h) Mechanical Engineer: The Mechanical Engineer shall have a bachelor's degree in mechanical engineering from an accredited college or university and a minimum of six years experience in the design, operation, maintenance or testing of US Navy ships HM&E equipment. Experience in mathematical modeling of, or trending performance of shipboard equipment or systems. Experience in the development of technical documentation utilizing military standards and specifications.

(i) Computer Scientist *: The Computer Scientist shall have a bachelor's degree in computer science or software engineering from an accredited college or university and ten years experience in tasks directly related to the SOW. This experience must include five years of machinery condition assessment and equipment condition monitoring, utilizing computerized, on-line diagnostic systems directly related to the SOW.

(j) Systems Analyst *: The System Analyst shall have a bachelor's degree from an accredited college or university and a minimum of six years experience in tasks directly related to the SOW. This experience must include three years of machinery condition assessment and equipment condition monitoring, utilizing diagnostic systems related to the SOW. The educational requirements may be satisfied with an additional eight years of experience directly related to shipboard maintenance assessment and condition monitoring problems.

(k) Senior Logistician: The Senior Logistician should have a bachelor's degree from an accredited college or university or be a graduate of military schools which have provided an in-depth knowledge of naval

shipboard systems maintenance and operation. Must demonstrate five years experience in the development of Integrated Logistics Support of systems and equipment directly related to the SOW.

(l) Logistician: The Logistician should have a high school diploma and be a graduate of military schools which have provided and in-depth knowledge of naval shipboard systems maintenance and operation. Must demonstrate five years experience in the development of Integrated Logistics Support of systems and equipment directly related to the SOW.

(m) Configuration Management Specialist: The Configuration Management Specialist should have a high school diploma and be a graduate of military schools which have provided an in-depth knowledge of naval shipboard systems maintenance and operation. Must have five years experience with the use and development of Configuration Management Plans of systems and equipment directly related to the Statement of Work (SOW).

(n) Draftsman: The Draftsman must have five years practical experience in graphic arts and a demonstrated knowledge of graphic production equipment.

(o) Word Processor : The Word Processor shall be a high school graduate or equivalent, must have three years experience in word processing, data entry, formatting, and operation of word processing equipment, must have two years experience in use of spreadsheet software and basic database setup, and must have formalized word processing software utilization.

(p) Secretary : The Secretary shall be a high school graduate or equivalent with five years experience and must be able to perform office work in support of the Program.

* - Denotes KEY personnel.